

**Amendments to the Claims**

The following listing of the claims will replace all prior versions, and listings of the claims in the application:

**Listing of Claims**

1. Canceled

2. (Currently amended) A method for routing packets through a switching network, wherein the switching network includes multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions, the method comprising:

coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme algorithm, and

generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a bicast cell, and the local input packets to each one of the switching elements includes idle, 0-bound, 1-bound and bicast packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by at least two bits, and the coding scheme includes coding the bits such that the first bit of the code for the in-band control signal corresponding to a 0-bound packet type is different from the first bit of the code for the in-band control signal corresponding to a 1-bound packet type.

3. (Currently amended) A method for routing packets through a switching network, wherein the switching network includes multiple stages of switching elements, each one of the

switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions, the method comprising:

coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme algorithm, and

generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a routing cell, and the local input packets to each one of the switching elements includes idle, 0-bound, and 1-bound packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by at least two bits, and the coding scheme includes coding the bits such that the first bit of the code for the in-band control signal corresponding to a 0-bound packet type is different from the first bit of the code for the in-band control signal corresponding to a 1-bound packet type.

4. Canceled

5. (Currently amended) A system for routing packets comprising:

multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions,

an encoder for coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme algorithm, and

a generator for generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route

the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a bicast cell, and the local input packets to each one of the switching elements includes idle, 0-bound, 1-bound and bicast packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by at least two bits, and the coding scheme includes coding the bits such that the first bit of the code for the in-band control signal corresponding to a 0-bound packet type is different from the first bit of the code for the in-band control signal corresponding to a 1-bound packet type.

6. (Currently amended) A system for routing packets comprising:
  - multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions,
    - an encoder for coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme algorithm, and
    - a generator for generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a routing cell, and the local input packets to each one of the switching elements includes idle, 0-bound, and 1-bound packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by at least two bits, and the coding scheme includes coding the bits such that the first bit of the code for the in-band control signal corresponding to a 0-bound packet type is different from the first bit of the code for the in-band control signal corresponding to a 1-bound packet type.